

Bioactivities of *Auricularia auricular-judae* (Fr: Quel)

V. Nagarathinam, N. Abdullah and N. Zainal Abidin

Institute of Biological Sciences, Faculty of Science, University of Malaya,
50603 Kuala Lumpur, Malaysia.

The fruit bodies of *Auricularia auricular-judae* have been traditionally used both as food and medicine in China. In the present study, polysaccharides, ethanol, methanol, dichloromethane and hot aqueous extracts obtained from *A. auricular-judae* were screened for their antioxidant, cytotoxic and anti human papillomavirus E6 activities. The antioxidant capacity of *A. auricular-judae* was determined using the DPPH radical scavenging method and reducing power assay. The effectiveness of the extracts in scavenging DPPH radicals were in the order: hot aqueous ($ED_{50} = 87.7$ mg/ml) > methanolic ($ED_{50} = 94.1$ mg/ml) > ethanolic ($ED_{50} = 109.5$ mg/ml) > dichloromethanolic ($ED_{50} = 122.9$ mg/ml) > polysaccharides ($ED_{50} = 127.8$ mg/ml). The ferric reducing antioxidants power (FRAP) assay of the extracts showed similar effectiveness as DPPH scavenging with absorbance values of hot aqueous (1.91) > methanolic (1.46) > ethanolic (1.21) > dichloromethanolic (1.14) > polysaccharides (0.49) at 20mg/ml concentration. The antioxidant capacities exhibited good positive correlation with total phenolic content since the highest total phenolic content was exhibited by hot aqueous 56.9 ± 0.001 / g extract, followed by methanol (1.93 ± 0.001). In the cytotoxicity test, all extracts of *A. auricular-judae* showed less than 50% inhibition against six cancer cell lines i.e; cervix cell line (Caski), human fibroblast cell (MRC 5), human colorectal cancer cell line (Skov), human mouth epidermal carcinoma (KB), human breast cancer (MCF 7), human intestinal colon cancer (HCT119) and MRC5 (normal cell). Certain types of Human papillomavirus (HPV) mainly HPV 18 is now widely recognized as the major cause of cervical cancer and its precursor lesions. The epidemiological studies showed there is a strong correlation between infection high risk HPV 18 and the development of cervical carcinoma. The E6 oncoprotein of HPV 18 involved in cellular transformation is usually highly expressed in cervical cancer cells. Therefore it was noted that suppression of E6 oncoprotein will slow or halt the progression of the disease. Extracts from *A. auricular-judae* were analyzed qualitatively at two concentrations (25 μ g/ml and 100 μ g/ml) for the anti HPV 18 E6 containing cervical cancer derived cell line (Caski) using the immunohistochemistry technique. The results showed that the suppression of E6 in Caski cells increased with increasing concentration

of mushroom extracts. This is revealed by the active reddish brown staining intensity on the cells. A reduction in expression of E6 protein was observed in cells incubated with the lowest concentration 25 µg/ml of ethanol, methanol, dichloromethane and polysaccharides extracts. Further reductions were observed at higher concentration of extracts, 100 µg/ml. Hence the study showed that all crude extracts of *A. auricular-judae* were effective in suppressing the expression of HPV-18E6 oncoprotein in Caski cells.